Weather and Climate

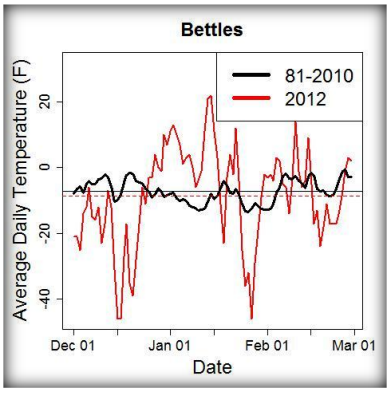
Gates of the Arctic Winter 2012-2013 Weather Summary

What is Normal?

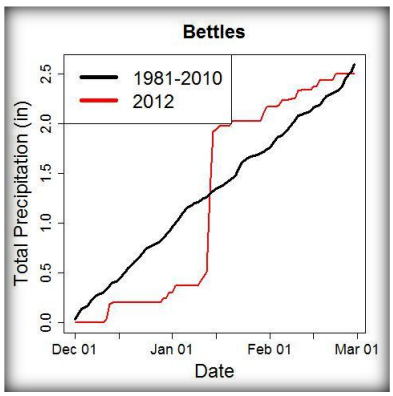
"Normals" are used to place recent climate conditions into historical context. It takes 30 years of continuous weather data at one location to calculate what makes temperatures or precipitation amounts "normal". The weather station in Bettles has been in operation since 1944, and has a very good long-term record. Bettles is a good index site to use for climate comparisons in the Gates of the Arctic National Park and Preserve.

In Bettles, winter (December-February) started out dry and very cold. The average temperature for December was -15.7° F, 10° F colder than normal. The total precipitation was 0.32 inches, which is only 32% of normal. Temperatures warmed substantially for the month of January – the average monthly temperature was -3.9° F, normal is -10° F. Over 18 inches of snow fell from January 11-15, contributing to a cumulative precipitation total of 229% of normal for the month. February temperatures returned to near normal temperatures. The average monthly temperature was -5.9°F, normal is -5.0° F. February was also dry, with less than 40% of normal precipitation. Snow depth at the end of February was 18 inches compared to the average of 28 inches. Since July 1, snowfall was only 51% of normal by the end of February.

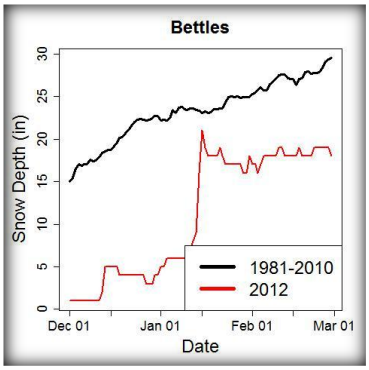
Bettles – Average Air Temperatures



Bettles – Cumulative Precipitation



Bettles – Cumulative Snow Depth



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Bettles Weather Records:
Climate Normal Period 1981 – 2010
Climate Record Period 1944 – 2013

Temperature

Winter 2012 – 2013	Average Monthly Temp °F	1981-2010 Normal °F	Departure from Normal °F	Monthly High °F / Date	Monthly Low °F / Date
December	-15.7	5.7	-10.0	17 / Dec 30	-50 / Dec 15
January	-3.9	-10.0	+ 6.1	26 / Jan 14	-53 / Jan 27
February	-5.9	-5.0	-0.9	21 / Feb 9	-33 / Feb 18

Winter Season Temperature Departure from Normal: -1.6°F

Precipitation

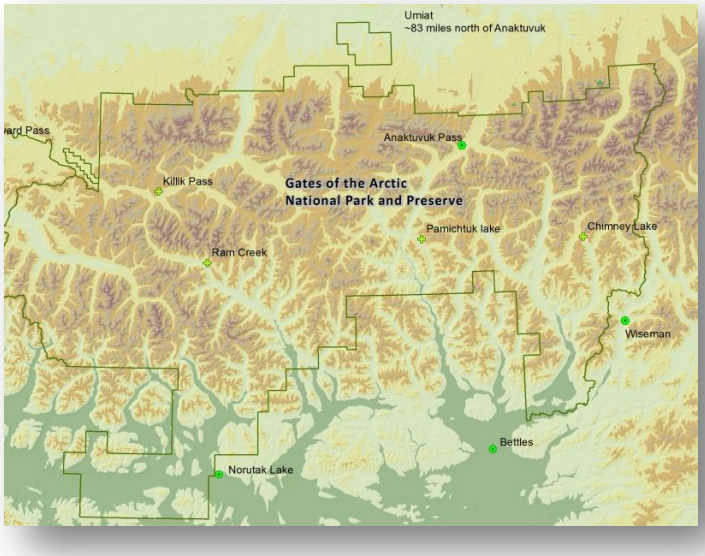
Winter 2012 - 2013	Total Monthly Precip. in.	1981-2010 Normal in.	Departure from Normal in.	Greatest 24 –hr. total in. / Date	# Days with >=0.01 in. water
December	0.30	0.92	-0.62	0.16 / Dec 12	5
January	1.86	0.81	+ 1.05	0.79 / Jan 13	11
February	0.33	0.85	-0.52	0.08 / Feb 10	10

Winter Season Precipitation Departure from Normal: -0.09 inches

Snowfall

Winter 2012 – 2013	Total Monthly Snowfall in.	1981-2010 Normal in.	Departure from Normal in.	Greatest 24 – hr. snowfall total in. / Date	Cumulative Snowfall since 1-July in.	Normal Snowfall from July 1 in.
December	4.7	15.6	-10.9	1.9 / Dec 12	8.1	46.6
January	23.7	13.9	+ 9.8	8.6 / Jan 13	31.8	60.2
February	6.4	14.0	-7.6	1.3 / Feb 10	38.2	74.2

As part of the climate monitoring vital sign, we now have additional NPS climate stations in Gates of the Arctic National Park and Preserve that complement the existing National Weather Service station at Bettles. The new NPS stations will provide critical data on high elevation sites in the Arctic and will help characterize the climate gradients and patterns affecting resources in the park. Data from Anaktuvuk Pass and Umiat are also summarized. Wiseman data are missing from December 25 – February 22, so are not summarized for the winter months.



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Gates of the Arctic Weather Summaries Winter 2012-2013:

Site	Elev. Ft.	Average Temp °F Dec	Jan	Feb	Winter Avg Temp °F	Extremes °F High	Low	Snow Depth In. *	Peak Wind mph	High T – Low T °F **
Anaktuvuk Pass	2103	-15.5	-10.0	-17.7	-14.4	20	-42	***	30	62
Norutak Lake	800	-23.1	-7.0	-8.1	-12.7	25	-49	***	16	74
Ram Creek	4110	-2.2	1.7	-1.1	-0.5	21	-21	11	32	42
Killik Pass	4355	-4.8	-0.9	-4.4	-3.4	20	-30	2	39	50
Umiat	267	-21.9	-21.5	-29.9	-24.4	14	-54	10	32	68

* Snow depth on Feb. 28th; ** Difference between the high and low temperature for the season; ***snow/wind not measured.
Chimney Lake and Pamichtuk are currently not transmitting real-time data and were therefore not summarized.

Interesting notes from RAWS stations:

- Umiat is recognized as having the lowest winter mean temperature of any "settlement" in Alaska.
- At the high elevation mountain sites the difference between the high and low temperatures for the season averaged ~ 50 degrees F, while the difference in the valley sites averaged ~ 70 degrees F.
- Temperature inversions are quite apparent in winter months with average seasonal temperatures 10 – 25 degrees warmer than lower valley sites.
- Although January is normally the coldest winter month, for winter 2012-2013 January had the warmest monthly mean temperature at all RAWS stations.

Ram Creek climate station above the Alatna River

Connecting Further

ARCN Weather and Climate Resource Brief

Access near real-time data from Western Regional Climate Center and MesoWest

Check out the 3 month weather outlook from the NOAA Climate Prediction Center

Statewide summary of weather highlights in the latest Climate Dispatch from the Alaska Center for Climate Assessment and Policy

Map of projected temperature and precipitation changes for Gates of the Arctic National Park and Preserve.

Please Note: The summarized data are preliminary and have not undergone final quality control. Therefore, these data are subject to revision.

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